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CORRES. CONTROL  
OUTGONG LTR NO.

November 20, 1995

95-RF-08890  
95-RM-ER-181-KH

DOE ORDER # 4700.1  
95RF08890

## ADMIN RECORD

DIST.	LTR	ENC
Bengal, P.		
Benson, C. A.		
Buddy, M. S.		
Evans, C. S.	X	X
Findley, M.		
Guinn, G.		
Guinn, L.		
Hopkins, J.		
Jenkins, K.		
Jierree, C.		
Konwinski, G.		
Law, J. E.	X	X
Luker, R.S.		
McAnally, J. L.		
McHugh, M. F.		
Motyl, K. M.		
Parker, A. M.	X	X
Primrose, A. L.		
Power, A.		
Schubbe, D. L.		
Steffen, D. E.		
Tyson, A. M.		
Zelle, H.		
<u>Louise, T.</u>	X	X
<u>Roberts, B.</u>	X	X
<u>Chromee, W.</u>	X	X

Christine S. Dayton  
Kaiser-Hill, L.L.C.  
Rocky Flats Environmental Technology Site

TRANSMITTAL OF GROUNDWATER STRATEGY MEETING NOTES FROM NOVEMBER 8, 1995  
(KH00003NS1A) - JEL-043-95

Attached are the meeting minutes from the above meeting. Please review these and let Annette Primrose at extension 4385 know if there are any changes required.

*John E. Law*  
John E. Law, P.E.  
Remediation Manager  
Sitewide Actions

ALP:dql

Attachment:  
As Stated

CC:  
L. M. Brooks - Kaiser-Hill  
M. L. Hogg - "  
D. C. Shelton - "

ER REC CTR (2)	X	X
CORRES. CONTROL	X	X
RMRS CC	X	X
TRAFFIC		
CLASSIFICATION		
UCNI		
UNCLASSIFIED	X	X
CONFIDENTIAL		
SECRET		

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IN REPLY TO RFP CC NO:

NA

ACTION ITEM STATUS

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☐ PARTIAL

LTR APPROVALS:

22.015.F

ORIG & TYPIST INITIALS:

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A-SW-002150

## NOTES ON GROUNDWATER STRATEGY MEETING - NOVEMBER 8, 1995

The working group developing a site-wide groundwater strategy for RFETS held its fourth meeting on November 8, 1995. The session was mediated by personnel from Keystone and had twenty seven people in attendance.

The meeting followed an agenda developed by Keystone with five major sections:

- introductory remarks;
- standards for surface water, surface soil, and source removals; and
- point of compliance and groundwater standards;
- assignment for the next meeting; and
- arrangement of the next meeting.

These agenda items were addressed sequentially and each forms a major heading of this summary. Sub-groups were assigned in the previous meeting to work on soil cleanup levels (Tim Lovseth; Gary Kleeman; and Barry Roberts) and the point of compliance (Elizabeth Pottorff; Barry Roberts; and Chris Dayton). The results from these subgroups are presented below under the appropriate heading.

### **I. Introductory remarks**

The highlights of the last meeting were prepared by Keystone and faxed to the attendees. Corrections to the highlights were proposed by the State of Colorado. These corrections included modification of the highlights to show that the Colorado Water Quality Control Commission is responsible for both groundwater and surface water standards in the state.

DOE provided some introductory remarks to set the stage for the meeting. The groundwater working group should have a clear regulatory basis for its conclusions and should keep the end use of the site in mind. The results need to acknowledge that cost and schedule affect the possibilities for the site. The vision for the site prepared by the Principals needs to drive the strategy, and all elements of the groundwater strategy should contribute to meeting the vision.

The State of Colorado asked for some clarification of the DOE's interpretation of the vision for RFETS, and the DOE briefly expounded on the issue. The land uses for RFETS are clearly identified in the vision, and will drive much of the cleanup. Cleanup will be performed to the extent necessary to protect the proposed human uses, to protect the ecology, and to consolidate the threat from wastes which will remain onsite. The vision states that the purpose of groundwater cleanup should be to preserve the quality of surface water and to protect the proposed land use. The areas where plumes of COCs reach surface water should be a primary focus of the group and will probably require some type of action.

## **II. Standards**

A table of the standards applicable to ground water and surface water at RFETS was presented at the meeting (Attachment 1). The discussion focused in turns on the standards to be applied to surface water, surface soils, and source removals. The results of these discussions are summarized below in sub-sections.

### **II A. Surface Water Standards**

Protection of surface water is the fundamental reason to conduct groundwater cleanup. The surface water standards affect the management of the retention ponds, and the degree to which groundwater must be cleaned up. The standards for both radioactive and non-radioactive constituents were discussed during the meeting.

#### **II A-1. Non-Radioactive Constituents**

The primary non-radioactive COCs in groundwater are volatile organic compounds, but there are a variety of other constituents which must be dealt with including nitrate and some metals. Currently, plumes of volatile organic compounds are entering groundwater. The State Water Commission has ultimate authority over the standards, and the current stream standards are lower than MCLs. The State of Colorado would be willing to support DOE in a petition to modify these standards if a consensus develops on the need to modify the standards.

#### **II A-2. Radionuclide Standards**

There are areas of the site which are affected by plutonium above ambient levels, and some particulate-bound plutonium has migrated from areas during episodes of high rainfall. The State sets a standard of 0.05 pCi/l Pu at the boundary. It was pointed out in the meeting that DOE orders regulate discharges of radiation from DOE facilities. The Atomic Energy Act specifically gives this authority to DOE, and State standards may not be applicable.

DOE has adopted this position at other sites, and the question of whether DOE has acceded to State regulation of radioactive discharges was discussed. An example was presented that was directly analogous to RFETS. Brookhaven National Laboratory is in the recharge zone of the sole-source aquifer which provides much of the drinking water for Long Island, and waste water from the laboratory forms the headwaters of the Peconic River. Tritium was formerly regulated in the SPDES permit, but tritium has been removed from the permit because of conflicts with DOE authority under the Atomic Energy Act.

### **II B. Surface-Soil Standards**

The levels of contamination in surface soil which will be acceptable for direct exposure will differ between the Buffer Zone and the Industrial Area. The Buffer Zone will be used as open space, and the Industrial Area will be classified for use by Office Worker. Office workers in the Industrial Area could be exposed to constituents for 250 days each year, while open space users would receive much less exposure. The DOE proposed that the PPRGs for the Buffer Zone be based on  $1 \times 10^{-6}$  risk for open space users and that the

PPRGs for the Industrial Area be based on  $1 \times 10^{-4}$  risk for office workers. The rationale behind this suggestion was explained, but the EPA suggested that the point of departure under CERCLA is  $1 \times 10^{-6}$ . The EPA also suggested that there was no strong reason to vary the risk levels between the Industrial Area and the Buffer Zone. If the cleanup levels cannot be attained, they can be adjusted in a consideration of balancing and modifying criteria.

The PPRGs were established using a risk-level of  $1 \times 10^{-6}$  and are lower in the industrial area than in the buffer zone because the assumed exposure in the buffer zone is only 25 days per year for recreational use. It may be possible to change the use designation for some of the site, and the Principals could remove industrial use from the vision and clean most of the site for open-space use. Remedy selection is a risk management decision, but  $1 \times 10^{-6}$  is the point of departure for the development for PPRGs. The PPRGs are related to action levels, but they are not necessarily the same, and a change in the land use designation will affect the remedy selection. Public acceptance must enter into the final selection of a remedy.

## **II C. Source Removal Standards**

The Source Removal Sub-Group reported on the standards developed by the sub-group (Attachment 2). The group reported that re-examination of the borehole data showed that unrealistically large volumes of soils would have to be removed if the removal action standards were based on MCLs or similarly restrictive values. The group therefore recommended establishing removal action levels based on water concentrations at 100 times the MCLs. This is a realistic value falling somewhere between MCLs and other proposed concentrations.

The group stated that field gas chromatograph results would be used to screen soils during removal actions and guide excavation. Source areas will be excavated as far as physically possible with backhoe equipment, but the water table will limit excavation depths in some areas. Field analyses at EPA Quality Level 2 will be used, and while confirmation samples may be submitted for CLP-type analyses at EPA Quality Level 4, such information will not be used to direct the removal action.

The State of Colorado expressed no real concern over the use of 100 times the MCL as a starting place for calculating soil-cleanup levels, but clearly stated that these standards relate solely to removal actions and that other actions may be required for final cleanup even if these levels are attained. This point was acknowledged by all parties, and the issues of action levels and cleanup triggers were discussed. Data from Ryan's Pit should be compared to the proposed cleanup levels to determine whether the removal action goals can be reached. The EPA and CDPHE requested copies of this data to determine if different actions would have been taken if the proposed cleanup goals had been in place.

### **III. Groundwater Point of Compliance and Standards**

#### **III A. Point of Compliance**

A combined chlorinated solvent plume map with well locations proposed by the working sub-group were presented to the full working group (Attachment 3) and the various chlorinate solvent plumes in groundwater were then discussed. One major plume involves vinyl chloride which reaches surface water at 400 ug/l vinyl chloride. These monitoring wells include three piezometers in springs and seeps. There is some uncertainty about the exact extent of some plumes, and the working sub-group selected wells with repeated detections. There are some problems because even under current recharge conditions some wells are periodically dry. Some concerns were voiced about the OU-2 and the Rocky Flats Alluvium plumes. The members of the working group were asked for suggestions and corrections.

Detailed discussion of the proposed point of compliance scheme will be delayed until next week. The DOE presented some basic philosophical discussion of its stand on point of compliance to the working group. In the DOE's opinion, the purpose of the point of compliance would be to protect organisms in surface water because human consumption uses of ground water has been ruled out. According to DOE this could logically lead to the measurement of COCs for compliance in surface water rather than in groundwater. The streams are gaining from the aquifer in most areas, but the quantities of groundwater reaching surface water are small. Two important aspects of the point of compliance issue are whether the standards can be met and whether the standards will hinder cleanup. The possibility of an administrative violation of RCRA compliance requirements are a concern for the DOE especially where such requirements do not make a substantive difference and where the site would be immediately out of compliance.

The State of Colorado contends that points of compliance are legally required, and that it may not be possible for the State's to compromise further from the proposal presented in the previous meeting. The State maintains that points of compliance and standards proposed in the previous meetings represent significant compromises with the points of compliance placed at the far end of the plumes. The State also proposed a point of compliance at the surface water boundary.

The State discussed the possibility of further compromises on the point of compliance and groundwater standard issues. The State has already made a number of concessions, and any further concessions on these issues will depend on DOE committing to specific actions related to groundwater. The State may not have the regulatory flexibility to apply to point of compliance and numerical standards, but the State would be willing to work on this issue should DOE make a good-faith effort. There may be a possibility of compromising on groundwater standards if the required conditions are met, but the State needs to see action on the groundwater problem before it is willing to show any more flexibility and there must be strong justification before standards can be waived or modified.

There is a large list of COCs in groundwater, and while much of the discussion has focused on chlorinated solvents, these additional COCs will complicate the discussion at some point. The nitrate plumes from the Solar Ponds were mentioned as one additional issue.

### **III B. Groundwater Standards**

There was not a great deal of additional discussion on the issue of groundwater standards. The basis for any groundwater standards must be clearly developed, and it may be necessary to have flexible standards. Some constituents exceed State standards at background levels, but this was not felt to be a major concern. There appeared to be general agreement that protection of the aquatic ecology in the surface water is the main driver for groundwater cleanup. As mentioned above, the State is not willing to back off on the application of numerical standards unless the DOE is willing to commit to specific actions, which are acceptable to the State, to cleanup the groundwater. Without such a commitment the State is not willing to compromise further.

### **IV. Assignments**

A working sub-group was assigned to deal with the issue of surface water standards. This group included:

John Law;  
Chris Dayton;  
George Setback;  
Keith Motyl;  
Judy Bruch;  
Jeb Love;  
Bill Fraser; and  
appropriate DOE staff.

### **V. Next Meeting**

The next meeting will be Wednesday, November 15 at 1:00-5:00 downtown in the EPA conference center.

Table 1. List of attendees

<u>Name</u>	<u>Organization</u>	<u>Phone/Fax</u>
Ted Ball	PRC	295-1101/295-2818
Todd Barker	Keystone	534-7395/(970)262-0152
Ravi Batra	DOE	966-9664/966-7447
Judy Bruch	CDPHE/WQCD	692-3510
Norma Castaneda	DOE EP	966-4226/966-4871
Win Chromec	RMRS	966-4535/966-7193
Chris Dayton	KH ER/WM&I	966-9887/966-5001
Susan Evans	RMRS/ER	966-3199
Bill Fraser	EPA	312-6580
Purna Halder	DOE	966-9718/966-4728
Mary Lee Hogg	KH/ER/WM&I	966-8465/966-5001
Gary Kleeman	EPA	312-6571/312-6897
John Law	RMRS	966-4842/966-2623
Jeb Love	CDPHE	692-3511/782-4969
Tim Lovseth	RMRS	8249/7193
Sandy Marek	CDPHE-WQ	692-3617
Richard Marty	Jason Associates	430-1710
Elizabeth Pottorff	CDPHE/WQCD	692-3586/782-0390
Annette Primrose	RMRS	966-4375/966-2623
Tim Reeves	SAIC	273-1250
Barry Roberts	RMRS	966-4530
Joe Schieffelin	CDPHE	692-3356/759-5355
Dave Shelton	KH	966-9877/966-5001
Carl Spreng	CDPHE	692-3358/759/5355
Sarah Stoves	Keystone	534-7395/(970)262-0152
Robert W. Terry	CDPHE/Rad Control	692-3051/782-5083
Kenneth Weaver	CDPHE/RCD	692-3068/782-5083

Groundwater Strategy Breakout Group/Point of Compliance

OU2

6586\*

New well up stream of 6586\*

New well between B-2 and B-3 (exact location yet to be determined)\*

75992\*

06091 (because of minimal saturated thickness in 04091\*)

Industrial Area

1986\*

10994\*

(monitoring wells P314289 and P313589 are proposed to be early warning wells)

Old Landfill

7086\*

IHSS 119.1 (OU1)

New well (5887 and 4787\* are dry as a result of their location relative to the French Drain)

Solar Ponds

1786\*

1386\*

IHSS 145

10692\*

Present Landfill

No wells selected pending evaluation of nature and extent of contamination

\* wells selected by the breakout group on November 7, 1995

## RFETS Soil Clean-up Specifications

- Comparison of calculated maximum soil contamination levels based on different groundwater criteria.

### EXAMPLE SOIL CLEAN-UP LEVELS PROTECTIVE OF GROUNDWATER

Chemical	Soil Clean-up Level (ppm)			
	Open Space 10 <sup>-6</sup> PPRG <sup>1</sup>	Open Space 10 <sup>-4</sup> PPRG <sup>1</sup>	MCL <sup>1</sup>	MCL X 100 <sup>1</sup>
1,1 DICHLOROETHENE	2.24E+00	2.24E+02	1.19E-01	1.19E+01
1,1,1 TRICHLOROETHANE	-	-	3.78E+00	3.78E+02
1,2 DICHLOROETHANE	4.17E+03	4.17E+05	6.33E-02	6.33E+00
1,2 DICHLOROETHENE	1.11E+01	1.11E+03	9.51E-02	9.51E+00
ACETONE	2.56E+04	2.56E+06	-	-
CARBON TETRACHLORIDE	1.35E-01	1.35E+03	1.10E-01	1.10E+01
CHLORFORM	1.97E-02	1.97E+04	1.52E-00	1.52E+02
ETHYLBENZENE	8.56E+04	8.56E+06	1.76E+01	1.76E+03
METHYLENE CHLORIDE	1.22E+02	1.22E+04	-	-
TETRACHLOROETHENE	3.52E+01	3.52E+03	1.15E-01	1.15E+01
TOLUENE	1.26E+05	1.26E+07	2.04E+01	2.04E+03
TRICHLOROETHENE	1.34E+02	1.34E+04	9.27E-02	9.27E+00
XYLENE (TOTAL)	1.74E+06	1.74E+08	2.96E+02	2.56E+04

1. The groundwater concentration used for calculation of the soil clean-up levels in each column. If there is no PPRG or MCL for a chemical a dash ( - ) is shown.